

CLAIMS (AMENDED ON 9 JANUARY 2001)

1. A method of removing bovine insulin from a liquid fat-free proteinous material originating from cow's milk, **characterized** by contacting the liquid fat-free proteinous material originating from cow's milk, the material having a pH of 2 to 8, at a temperature of less than 65°C, with an adsorption resin, whereby the weight ratio of the proteinous material to be treated to the adsorption resin is at most 100:1, and combining with said resin treatment at least one ultra and dia-filtration treatment of the proteinous material, and if necessary, concentrating the so obtained liquid material into a protein concentrate and optionally drying to powder.
2. A method as claimed in claim 1, **characterized** by using whey, a whey protein concentrate, skimmed milk or a casein solution, preferably whey, as the liquid fat-free proteinous material originating from cow's milk.
- ~~3. A method as claimed in claim 1 or 2, **characterized** by using a styrene-based or acrylic-based adsorption resin that is preferably macroporous, as the adsorption resin.~~
4. A method as claimed in any one of claims 1 to 3, **characterized** in that the weight ratio of the proteinous material to be treated to the adsorption resin is suitably 10:1 to 40:1.
5. A method as claimed in any one of claims 1 to 4, **characterized** by introducing the proteinous material through a column, filled with an adsorption resin, at a flow rate of 1 to 20 column volumes (BV)/h, suitably 6 to 8 BV/h, at a temperature of 2 to 30°C, suitably 2 to 10°C.
6. A method as claimed in any one of claims 1 to 4, **characterized** by contacting the proteinous material with the adsorption resin at a temperature of 2 to 30°C, suitably 2 to 10°C, in a mixing vessel, whereby the contact time under mild mixing is below 2 hours, suitably 60 minutes.
7. A method as claimed in any one of claims 1 to 6, **characterized** by ultra and dia-filtering the liquid fat-free proteinous material originating from cow's milk using 5,000 to 25,000 D cut-off membranes, before bringing the proteinous material into contact with the

adsorption resin and/or after the adsorption resin treatment.

8. A method as claimed in any one of claims 1 to 7, **characterized** by pretreating the liquid fat-free proteinous material originating from cow's milk, before bringing it into contact with the adsorption resin, by clarifying it, suitably by microfiltration, ultrafiltration or centrifugation, preferably by filtering it through 0.05 to 1.4 micrometre microfiltration membranes, preferably 0.1 micrometre membranes.

9. A method as claimed in any one of claims 1 to 8, **characterized** by concentrating the liquid material, treated with the adsorption resin, by ultra and dia-filtration using 5,000 to 25,000 D cut-off membranes, suitably 10,000 D cut-off membranes, into a protein concentrate, which is optionally dried into a powder, suitably by spray or frost drying.

10. A substantially bovine insulin-free, fat-free proteinous material originating from cow's milk, **characterized** by being prepared by a method as claimed in any one of claims 1 to 9.

11. Use of a substantially bovine insulin-free, fat-free proteinous material, originating from cow's milk, and prepared by a method as claimed in any one of claims 1 to 9, as the protein part in infant formula or another special nutritive preparation or the raw material in consumption milk, other milk drinks or various milk preparations.

12. A method of preparing a substantially bovine insulin-free infant formula or other special nutritive preparation or consumption milk, other milk drink or other milk preparation or a raw material therefor, **characterized** by using a substantially bovine insulin-free, fat-free, proteinous material, originating from cow's milk, and prepared by a method as claimed in any one of claims 1 to 9 as the protein part in the preparation of a product.